

MANFRED T. REETZ ET AL.
USSN 09/831,566
REPLY TO OFFICE ACTION DATED MAY 17, 2004
AMENDMENT OF OCTOBER 18, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.-20. (Canceled)

21. (Previously Presented) Additive-stabilized, 100% water-soluble metal oxide colloids having particle sizes ranging from 0.5 - 5 nm, comprising at least one metal of groups VIb, VIIb, VIII, Ib or IIb of the Periodic Table, and stabilized by at least one water-soluble additive capable of stabilizing said colloids.

22. (Previously Presented) Colloids according to claim 21, which are monometal-oxide colloids having particle sizes ranging from 0.5 - 5 nm, comprising a metal of groups VIb, VIIb, VIII, Ib or IIb of the Periodic Table, and stabilized by at least one water-soluble additive capable of stabilizing said colloids.

23. (Previously Presented) Colloids according to claim 21, which are bimetal-oxide colloids or multimetal-oxide colloids having particle sizes ranging from 0.5 - 5 nm, comprising a

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plurality of metals of groups VIb, VIIb, VIII, Ib or IIb of the Periodic Table, and stabilized by at least one water-soluble additive capable of stabilizing said colloids.

24. (Currently Amended) Colloids according to claim 21, which are bimetal-oxide colloids or multimetal-oxide colloids having particle sizes ranging from 0.5 - 5 nm, comprising a metal of the a main group of the Periodic Table and one or more metals of groups VIb, VIIb, VIII, Ib or IIb of the Periodic Table, and stabilized by at least one water-soluble additive capable of stabilizing said colloids.

25. (Currently Amended) Colloids according to claim 24, wherein said metal of the a main group of the Periodic Table is tin.

26. (Previously Presented) Colloids according to claim 21, wherein said at least one water-soluble additive capable of stabilizing said colloids is selected from the group consisting of amphiphilic betaines, cationic surfactants, anionic surfactants, nonionic surfactants, and water-soluble polymers.

27. (Previously Presented) A process for preparing colloids according to claim 21, said process comprising hydrolyzing or condensing at least one metal salt in an aqueous solution comprising a base in the presence of a water-soluble additive capable of stabilizing said colloids.

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28. (Previously Presented) The process according to claim 27, which is for the preparation of monometal-oxide colloids, and comprises hydrolyzing or condensing a salt of a metal of groups VIb, VIIb, VIII, Ib or IIb of the Periodic Table in an aqueous solution comprising a base in the presence of a water-soluble additive capable of stabilizing said colloids.

29. (Previously Presented) The process according to claim 27, which is for the preparation of bimetal-oxide colloids or multimetal-oxide colloids, and comprises hydrolyzing or condensing salts of a plurality of metals of groups VIb, VIIb, VIII, Ib or IIb of the Periodic Table in an aqueous solution comprising a base in the presence of a water-soluble additive capable of stabilizing said colloids.

30. (Currently Amended) The process according to claim 27, which is for the preparation of bimetal-oxide colloids, and comprises hydrolyzing or condensing a salt of a metal of the a main group of the Periodic Table and a salt of a metal of groups VIb, VIIb, VIII, Ib or IIb of the Periodic Table in an aqueous solution comprising a base in the presence of a water-soluble additive capable of stabilizing said colloids.

31. (Currently Amended) The process according to claim 30, wherein said salt of said metal of the a main group of the Periodic Table is SnCl_2 or SnCl_4 .

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32. (Previously Presented) The process according to claim 27, wherein the water-soluble additive capable of stabilizing said colloids is selected from the group consisting of amphiphilic betaines, cationic surfactants, anionic surfactants, nonionic surfactants, and water-soluble polymers.

33. (Previously Presented) The process according to claim 27, wherein the base is an alkali metal carbonate, an alkaline earth metal carbonate, an alkali metal bicarbonate, an alkaline earth metal bicarbonate, an alkali metal hydroxide, an alkaline earth metal hydroxide, an alkali metal phosphate, an alkaline earth metal phosphate, an alkali metal hydrogen phosphate or an alkaline earth metal hydrogen phosphate.

34. (Previously Presented) The process according to claim 33, wherein the base is Li_2CO_3 , Na_2CO_3 , K_2CO_3 , Cs_2CO_3 or MgCO_3 .

35. (Previously Presented) The process according to claim 27, which is conducted at a temperature between 20 and 100°C.

36. (Previously Presented) The process according to claim 35, which is conducted at a temperature between 50 and 90°C.

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37. (Previously Presented) The process according to claim 27, which is for the preparation of bimetal-oxide colloids or multi-metal-oxide colloids, and further comprises choosing the mass ratio of metal salts to control the mass ratio of metals in the bimetal-oxide colloids or multimetal-oxide colloids.

38. (Previously Presented) A process for preparing water-soluble, nanostructured, monometal colloids, bimetal colloids or multimetal colloids each having particle sizes ranging from 0.5 - 5 nm, said process comprising:

- a) preparing monometal-oxide colloids, bimetal-oxide colloids or multimetal-oxide colloids according to the process of claim 27; and
- b) reducing said monometal-oxide colloids, bimetal-oxide colloids or multimetal-oxide colloids.

39. (Previously Presented) The process according to claim 38, which is conducted in the presence of a reduction agent selected from the group consisting of hydrogen, hypophosphite and formate.

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40. (Previously Presented) A process for fixing colloids according to claim 21 onto solid supports, said process comprising treating solid oxidic or non-oxidic solid materials with an aqueous solution of the colloids.

41. (Previously Presented) A process for fixing colloids onto solid supports, said process comprising preparing colloids by the process according to claim 38, and treating solid oxidic or non-oxidic solid materials with an aqueous solution of the colloids.

42. (Previously Presented) A process for immobilizing colloids according to claim 21, said process comprising incorporating said colloids into sol-gel-materials.

43. (Previously Presented) The process according to claim 42, wherein the sol-gel materials are prepared from gel precursors, which gel precursors are $\text{Si}(\text{OCH}_3)_4$ or mixtures of $\text{Si}(\text{OCH}_3)_4$ and $\text{C}_n\text{H}_{2n+1}\text{Si}(\text{OCH}_3)_3$ ($n=1$ to 4).

44. (Previously Presented) A process for immobilizing colloids, said process comprising preparing colloids by the process according to claim 38, and incorporating said colloids into sol-gel materials.

45. (Previously Presented) The process according to claim 44, wherein the sol-gel

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materials are prepared from gel precursors, which gel precursors are $\text{Si}(\text{OCH}_3)_4$ or mixtures of $\text{Si}(\text{OCH}_3)_4$ and $\text{C}_n\text{H}_{2n+1}\text{Si}(\text{OCH}_3)_3$ ($n=1$ to 4).